

CLAIMS

- 5 1. A laser marking system comprising means for transmitting the laser-emitted light onto one or a plurality of points on a substrate, with means for displacing the substrate and laser light emitting source relative to one another, wherein the substrate is selected to be sufficiently sensitive to the emitted light so that a reaction occurs at either said point or plurality of points which marks the substrate and characterised by the feature that the laser
10 light emitting source comprises an array of lasers.
2. A laser marking system, comprising an array of lasers, which in use, emit light, means for transmitting the emitted light onto one or a plurality of points on a substrate, means for displacing the substrate and said array relative to one another, and a heater whose primary
15 function is to heat the substrate prior to radiating the substrate so that the energy required to be supplied by the array of lasers for marking the substrate is minimised.
3. A system according to Claim 2, wherein the heater employs a heat exchanger for transferring the heat generated by the array of lasers and/or drive electronics to the
20 substrate.
4. A system according to Claim 2, wherein the heater is a light emitter.
5. A laser marking system, comprising an array of lasers, which in use, emit light, means
25 for transmitting the emitted light onto one or a plurality of points on a substrate, means for displacing the substrate and said array relative to one another, and a further light emitter positioned relative to the laser array and adapted to supply sufficient light in order to bring the substrate close to the marking threshold so that as the array of lasers radiates, the marking threshold is passed due to the combined effect of the laser array and the further
30 light emitter.
6. A system in accordance with Claim 5, wherein the light emitter radiates the substrate at a point substantially coincident with the point of laser radiation.

7. A system according to any preceding Claim, comprising lasers which emit light in the infra red or near infra red spectrum and the substrate is selected to be sensitive to visible infra red or near infra red radiation.

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8. A system according to any preceding Claim, comprising means for varying the energy supplied to each point of the substrate by varying over time the pulse and/or amplitude of the transmitted light so that a scale of mark's pigmentation may be achieved.

10 9. A system according to any of the preceding Claims, wherein one or more optical elements are located between the laser and/or lasers and the substrate.

10. A system according to Claim 9, wherein said one or more optical elements incorporate a single bulk lens and/or an array of micro lenses and/or a wave guide and/or a graded-index lens and/or a diffractive optical element and/or a reflector.

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11. A system according to any of the preceding Claims, which incorporates a plurality of radiation outputs and means for switching the path of radiation to selected outputs.

20 12. A system according to any of the preceding Claims, which incorporates means for directing the radiation in a plurality of directions.

13. A system according to either of Claims 11 and 12, incorporating mechanically displaceable optical elements and/or electronically switchable diffractive elements and/or branched wave guides.

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14. A system according to any of the preceding Claims, wherein the or each laser is pulsed.

30 15. A laser marking system substantially as hereinbefore described with reference to and/or illustrated in any appropriate combination of the accompanying text and/or figures.